MYCOTAXON

Volume 112, pp. 65–74 *April–June 2010*

Anaselenosporella sylvatica gen. & sp. nov. and *Pseudoacrodictys aquatica* sp. nov., two new anamorphic fungi from Mexico

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Abstract — *Anaselenosporella sylvatica* anam. gen. & sp. nov. found on dead leaves of an unidentified plant and *Pseudoacrodictys aquatica* found on a decaying twig submerged in a stream, both in Veracruz, Mexico, are described and illustrated. The former is distinguished by fasciculate, macronematous, dichotomous branched, brown conidiophores, and polyblastic, sympodially proliferating conidiogenous cells with flat to slightly convex and obscure loci. The conidia are solitary, unicellular, acicular, semicircular, and curved to uncinate. The latter is characterized by sub-involute or imbricate, globose to irregular, dark brown to black conidia.

Key words —aquatic fungi, conidial fungi, cloud forest, systematics

Introduction

During two expeditions in 1999 in a cloud forest, "Las Cañadas", and in 2002 in several undisturbed rainforests of "Los Tuxtlas", Veracruz, Mexico, two interesting anamorphic fungi were collected, one on decaying leaves in leaf litter and the other on a submerged decaying twig in a stream. These fungi were distinctly different morphologically from any previously described anamorphic fungi and are therefore described as new taxa.

Materials and methods

Samples of submerged plant material in a stream were collected during expeditions in 2002 through the rainforest "Los Tuxtlas", and in 1999 in a cloud forest, "Las Cañada", all in Veracruz State, Mexico. Individual collections were placed in paper bags and taken to the laboratory as described by Castañeda (2005), then incubated in Petri dishes at 25ºC placed in a moist chamber composed of plastic containers (50 L capacity) with 200 mL of sterile water plus 2 mL of glycerol, and examined at regular intervals for the presence of microfungi. Mounts were prepared in polyvinyl alcohol-glycerol (8.0 g in 100 mL of water, plus 5 mL of glycerol) and measurements made at a magnification of × 1000. Micrographs were obtained with a Zeiss Axioskop 40 microscope.

Taxonomy

Anaselenosporella Heredia, R.F. Castañeda & R.M. Arias, **anam. gen. nov.**

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Fungus anamorphicus. Coloniae in substrato naturali pilosae, effusae, brunneae vel nigrae. Mycelium partim superficiale et partim in substrato immersum. Conidiophora macronemata, mononemata, ramosa, erecta vel prostrata, septata, laevia vel verrucosa, ferruginea vel brunnea. Cellulae conidiogenae polyblasticae, lageniformes, cylindricae ad usque subulatae, discretae, indeterminatae cum proliferationibus holoblasticis sympodialibus. Loci conidiogeni complanati, lentiformes vel convexi, laterales et apicales. Secessio conidiorum schizolytica. Conidia solitaria, acicularia, filiformia, fusiformia vel semicircularia, unicellularia, hyalina, laevia vel verruculosa, sicca vel tenuitunicata. Teleomorphosis ignota.

Species typica: *Anaselenosporella sylvatica* Heredia, R.F. Castañeda & R.M. Arias

Etymology: Greek, *Ana-*, meaning upwards, back and again; Latin, *-selenosporella*, referring to a hyphomycete genus *Selenosporella*.

Anamorphic fungi. Colonies on the natural substratum effuse, hairy, brown or black. Mycelium superficial and immersed. Conidiophores macronematous, mononematous, erect or prostrate, septate, smooth or verruculose, brown. Conidiogenous cells polyblastic, lageniform, cylindrical to subulate, indeterminate with holoblastic sympodial proliferations, discrete. Conidial secession schizolytic. Conidiogenous loci flattened, lenticular or convex, lateral

and apical, slightly melanized. Conidia solitary, acicular, filiform, fusiform to semi-circular, unicellular, hyaline, smooth or verruculose, dry or hygroscopic. Teleomorph unknown.

Comments. The genera *Selenosporella* G. Arnaud ex MacGarvie (Castañeda et al. 2009) and *Selenosporopsis* R.F. Castañeda & W.B. Kendr. (Castañeda & Kendrick 1991) can be compared with *Anaselenosporella* in conidial ontogeny and shape, particularly in terms of the sympodial proliferation of conidiogenous cells of the main body. There are, however, clear differences in the ramification and distinctive compact cluster formed by the conidiogenous cells of *Anaselenosporella*. The conidiogenous loci in *Selenosporella* and *Selenosporopsis* are short and long denticulate respectively, whereas they are flattened or somewhat convex and slightly melanized, producing conidia truncate at the base in *Anaselenosporella*. Although conidiogenous cells of *Amphophialis*, *Sporendocladia*, *Stylaspergillus*, *Thysanophora,* and *Veramyces* are arranged in a similar compact cluster, the pattern of proliferation of the conidiogenous cell is enteroblastic and a succession of conidia are produced through each conidiogenous locus.

Anaselenosporella sylvatica Heredia, R.F. Castañeda & R.M. Arias, **sp. nov.**

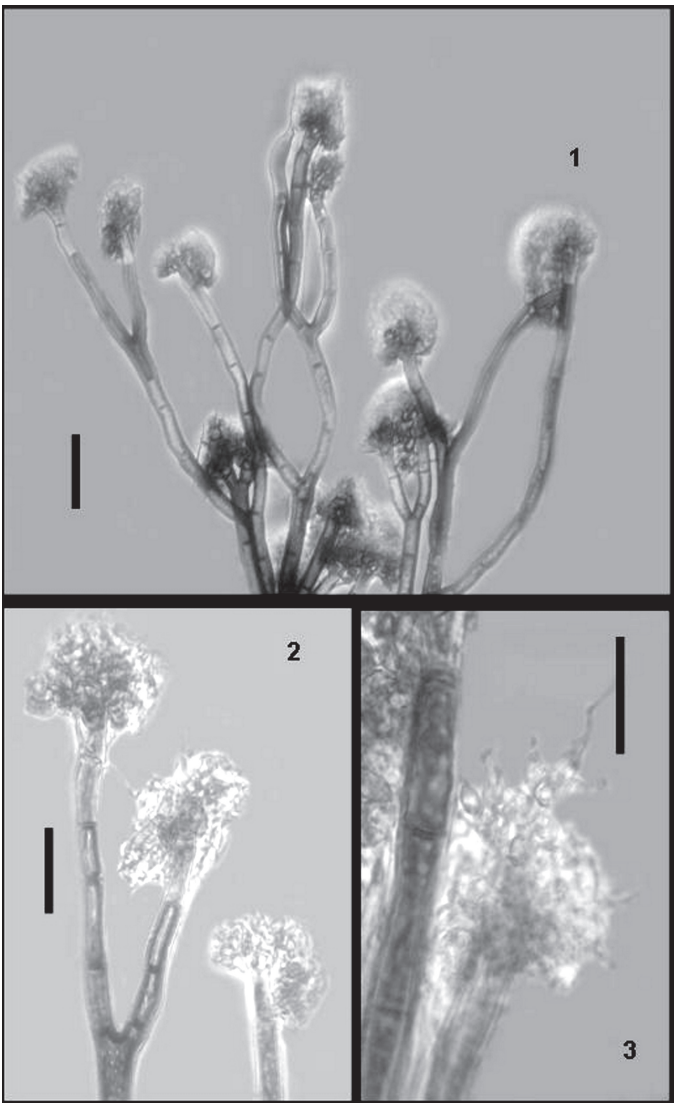
MycoBank MB 515453 Figs 1–8

Coloniae in substrato naturali pilosae, effusae, atrobrunneae. Mycelium partim superficiale et partim in substrato immersum, ex hyphis septatis ramosis, brunneis, 2–4 µm diam compositum. Conidiophora macronemata, mononemata, saepissime dichotome ramosa, erecta, multiseptata, luxuriantia, 700–1200 µm alta, 12–28 µm crassa prope basim, laevia, ferruginea vel atrobrunnea sed saepe leviter brunnea vel lurida punctata vel guttata, dilute brunnea vel pallidiora ad apicem. Cellulae conidiogenae polyblasticae, lageniforme, interdum leviter geniculatae ad apicem, indeterminatae cum proliferationibus holoblasticis sympodialibus, discretae, compactae, fasciculatae, subhyalinae, 5–10 × 2.0–2.5 µm, ex ramis metuloideis, cuneiformibus, 3.0–4.5 µm crassis, orientes. Loci conidiogeni complanati vel lentiformes, laterales et apicales, leviter maculati. Secessio conidiorum schizolytica. Conidia solitaria, acicularia, curvata ad usque semicircularia, unicellularia, truncata ad basim, hyalina, 7–12(–15) × 0.8–1.2 µm, laevia, tenuitunicata, interdum in massa alba congregata. Teleomorphosis ignota.

Type: 6 km from Huatusco, "Las Cañadas", Veracruz, Mexico, on decaying leaves of an unidentified plant, 20.V.1999. G. Heredia & R.M. Arias (**Holotype**: MUCL 45630).

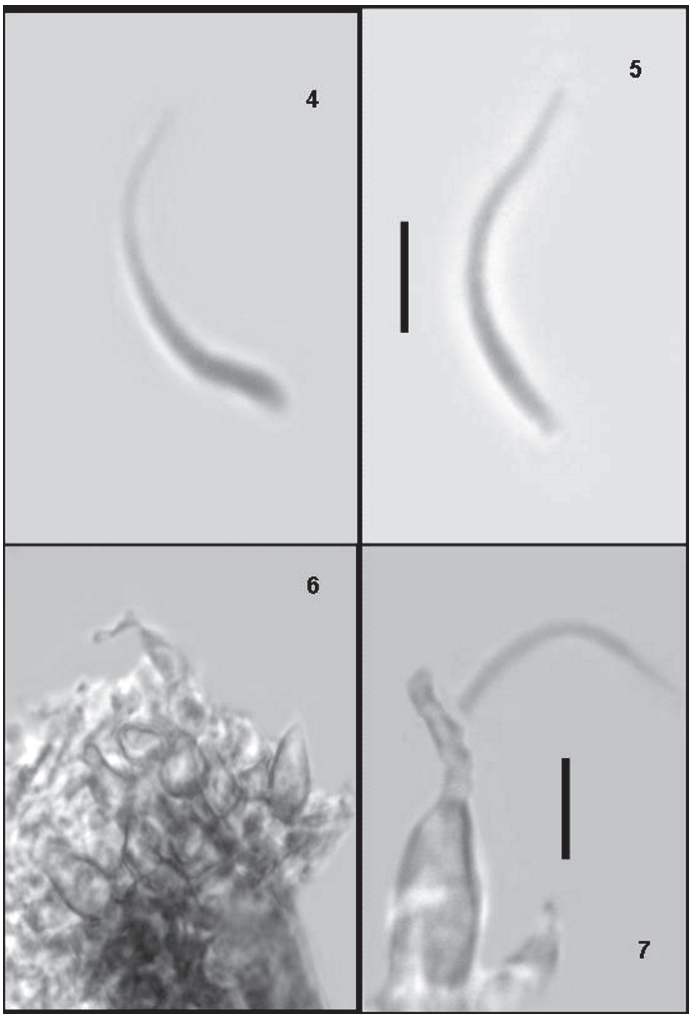
Etymology: Latin, *sylvatica* – meaning growing wild.

Colonies on the natural substrate effuse, hairy, amphigenous, dark brown. Mycelium superficial and immersed; hyphae septate, branched, 2–4 µm diam, smooth-walled, brown. Conidiophores macronematous, mononematous, dichotomously branched, erect, straight or flexuous multi-septate, smooth-walled, luxurious, 700–1200 × 12–28 µm, dark brown at the base, rusty to dark brown, but dotted with pale brown or lurid round spots across the length and



Figs 1–3. *Anaselenosporella sylvatica*, photographs from holotype (MUCL 45630). Conidiophores, conidiogenous cells, and conidia.
Scale is indicated by bars: Fig. 1 = 100 µm; Fig. 2 = 50 µm; Fig. 3 = 10 µm.

pale brown or subhyaline towards the apex. Conidiogenous cells polyblastic, lageniform, slightly geniculate and elongated towards the apex, 5–10 × 2.0–2.5 µm, indeterminate, sympodial proliferating, discrete, formed in a compact



Figs 4–7. *Anaselenosporella sylvatica*, photographs from holotype (MUCL 45630). 4–5. Conidia. 6–7. Conidiogenous cells and conidium. Scale is indicated by bars = 5 μm.

cluster on cuneiform, 3.0–4.5 μm wide metula-like branches. Conidiogenous loci flattened to slightly lenticular or convex and obscure (melanized), lateral and apical. Conidial secession schizolytic. Conidia solitary, acicular, curved to semicircular, unicellular, truncated at the base, hyaline, 7–12(–15) × 0.8–1.2 μm, smooth, hygroscopic or slightly tunicate, sometimes forming white mucilaginous masses. Teleomorph unknown.

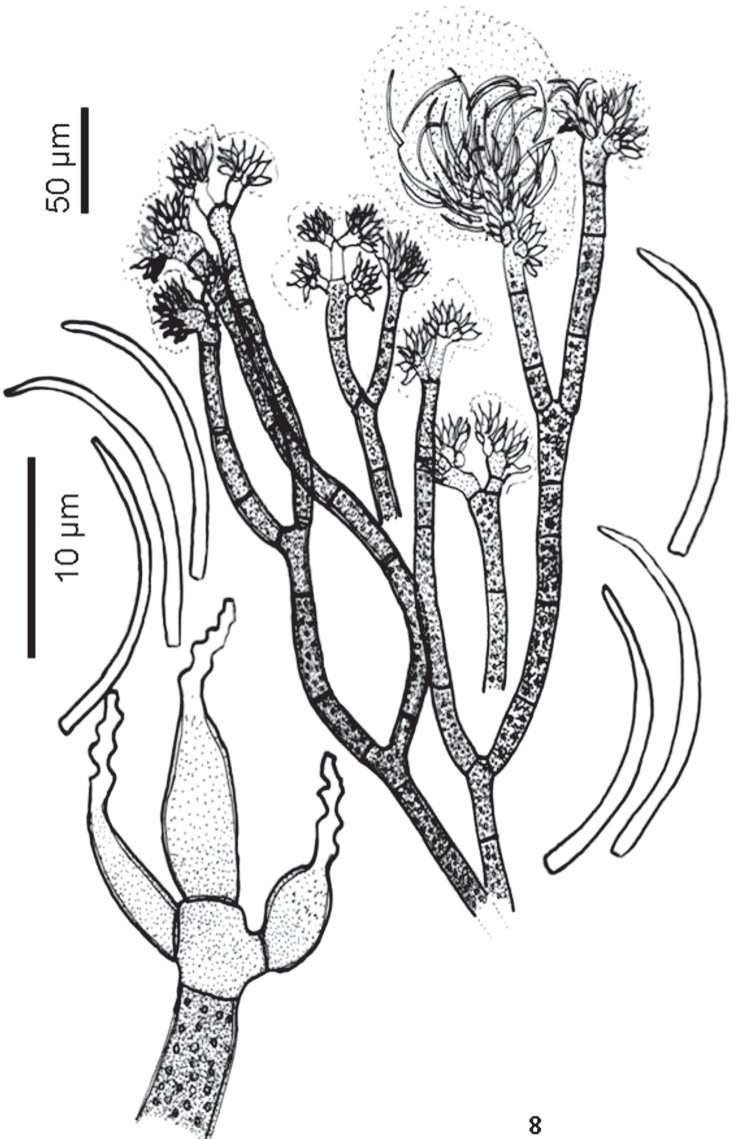


Fig. 8. *Anaselenosporella sylvatica*, drawings from holotype (MUCL 45630). Conidiophore, conidiogenous cells, and conidia.
Scale is indicated by bars.

Pseudoacrodictys aquatica R.F. Castañeda, R.M. Arias & Heredia, **sp. nov.**

MycoBank MB 515454 Figs 9–16

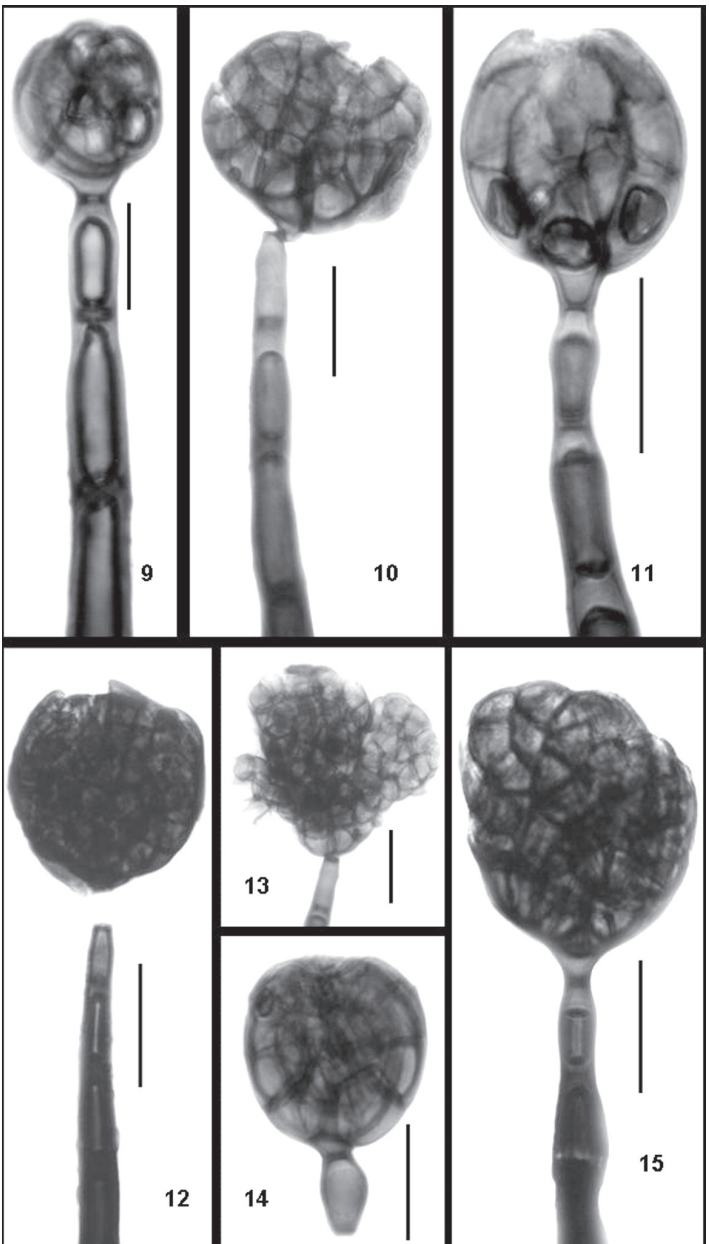
Coloniae in substrato naturali effusae, pilosae, nigrae, brunneae. Conidiophora macronemata, mononemata, 4–7-septata, simplicia, 180–270 × 12–15 µm, atrobrunnea vel nigra ad usque basim versus brunnea ad apicem, laevia cum 2–6 proliferationibus enteroblasticis percurrentibus praedita. Cellulae conidiogenae hologenosae, monoblasticae, cylindricae vel doliiformes, 15–37 × 5–10 µm, integratae, indeterminatae, atrobrunneae et brunneae ad apicem. Secessio conidiorum schizolytica. Conidia solitaria, acrogena, dictyoseptata, sub-involuta ad usque imbricata, globosa, nonnunquam leviter laxa ad apicem vel irregularia, nigra, 31–46 × 30–46 µm, sicca, cum cellulis basalibus cuneiformibus, 6–9 µm latis, brunneis. Teleomorphosis ignota.

Type: "Los Tuxlas", Estación de Biología, Veracruz, Mexico, on a decaying twig submerged in a stream, 19.V.2002. coll. R. M. Arias and J.Y.C. Elizondo (**Holotype**: XAL CB745).

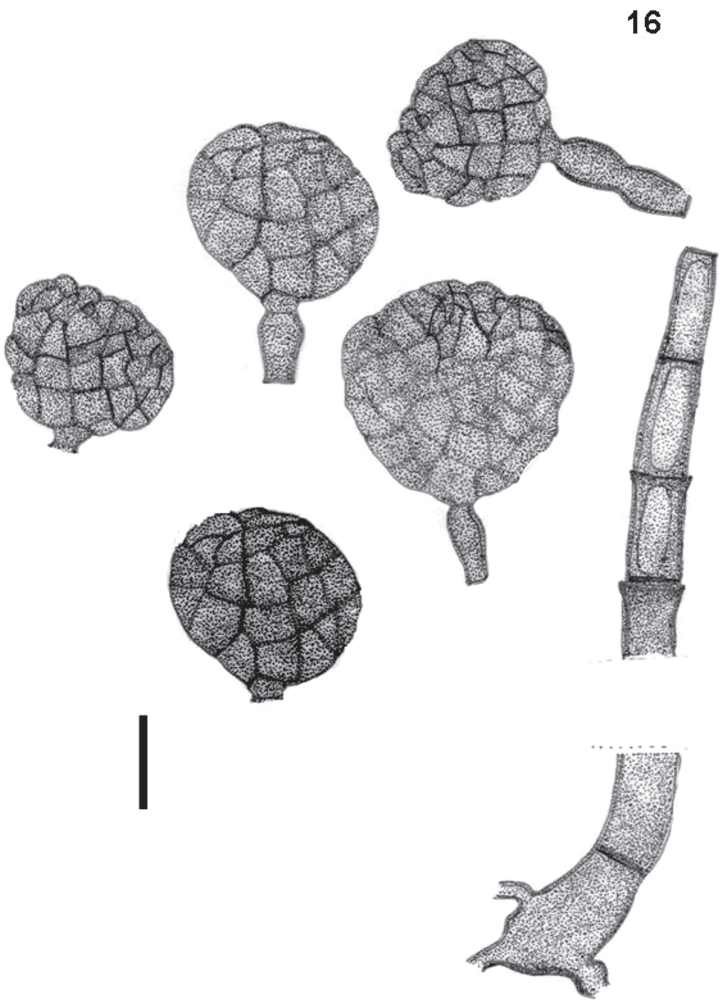
Etymology: Latin, *aquatica* – refers to its growth in water.

Colonies on the natural substratum effuse hairy, black. Mycelium mostly immersed. Hyphae septate, branched, 2–3 µm diam, smooth-walled, black to dark brown. Conidiophores macronematous, mononematous, 180–270 × 12–15 µm, erect, straight or slightly curved, subulate, sometimes with a nodulose aspect after percurrent proliferation, 4–7-septate, single or sometimes loose fasciculate, dark brown or black at the base and brown towards the apex, smooth, with 2–6 enteroblastic percurrent proliferations. Conidiogenous cells holoblastic, monoblastic, terminal, cylindrical, doliiform to slightly subulate, integrated, indeterminate with enteroblastic percurrent proliferations, 15–37 × 5–10 µm, dark brown to brown, smooth-walled. Conidial secession schizolytic. Conidia solitary, acrogenous, dictyoseptate, globose, sub-involute, imbricate or irregular, sometimes slightly loose at the apex, 31–46 × 30–46 µm, black, dry with cuneiform, 6–9 µm wide, brown basal cells. Teleomorph unknown.

Comments. The genus *Pseudoacrodictys* was introduced by Baker & Morgan-Jones (2003) to classify seven species previously described under a broad generic concept of *Acrodictys;* the included species were distinguished by more commonly indeterminate, enteroblastic percurrently proliferating, cylindrical, doliiform to subulate conidiogenous cells and schizolytic conidial secession. Conidia are holoblastic, solitary, acrogenous, subglobose to broadly pyriform to turbinate or irregular, dictyoseptate, bearing one or several aseptate or septate, somewhat "hyphae-like", straight, undulate, involute to uncinate cellular appendages. Subsequently another species was described, *Pseudoacrodictys dimorphospora* Somrith. & E.B.G. Jones (Somrithipol & Jones 2003), which strongly resembles *Ceratosporella compacta* (Castañeda et al. 1996). Only *P. deightonii* (M.B. Ellis) W.A. Baker & Morgan-Jones and *P. dennisii* (M.B. Ellis) W.A. Baker & Morgan-Jones (Baker & Morgan-Jones 2003) superficially resemble *P. aquatica*. *Pseudoacrodictys deightonii,* however, has conidia that



Figs 9–15. *Pseudoacrodictys aquatica*, photographs from holotype (XAL CB 745). Conidiogenous cells and conidia. Scale is indicated by bars = 20 µm.



Figs 16. *Pseudoacrodictys aquatica*, drawings from holotype (XAL CB 745). Conidiogenous cells and conidia. Scale is indicated by bars = 20 µm.

are highly variable in shape, ranging from irregularly turbinate to obpyriform with a botryose aspect derived from swollen and protruding peripheral cells (42–84 × 28–57 µm) and a cuneiform, 3.5–5.0 µm wide basal cell; *P. dennisii* has conidia that are obovoid to pyriform, often somewhat flattened apically and sometimes compressed sub-apically and laterally, 26–57 × 19–30 µm and distinctly protuberant, with a cylindrical, 4–6 µm wide, darker basal cell. Both species can be easily separated from *P. aquatica*.

Acknowledgements

We are deeply indebted to Prof. Lori M. Carris (Washington State University) and Dr. Antonio Hernández-Gutiérrez (Universidade Federal do Pará, Brazil) for kindly reviewing the manuscript. We thank the Cuban Ministry of Agriculture for facilities and the UK Darwin Initiative for support. The author RFCR thanks Drs Lori Carris, De-Wei Li, Felipe Wartchow, Melissa Mardones, Cony Decock, and Shaun Pennycook for their generous and valued assistance with literature not otherwise available.

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